

Claims

- [c1] An x-ray system utilized to acquire an image, the x-ray system comprising:
an x-ray detector comprising detector elements arranged in rows and columns,
said detector elements storing a charge representative of an x-ray level;
first and second sets of sensing circuits reading said charge from said detector
elements;
scan lines connecting to each of said detector elements in one of said rows and
columns; and
first and second sets of data lines connecting to a portion of said detector
elements in said one of said rows and columns, said first set of data lines being
connected to said first set of sensing circuits, said second set of data lines
being connected to said second set of sensing circuits, wherein at least one data
line from said first set of data lines is interspersed with said second set of data
lines.
- [c2] The x-ray system of claim 1, wherein each said data line of said first set of data
lines alternates with each said data line of said second set of data lines.
- [c3] The x-ray system of claim 1, wherein said charge read from said detector
elements outside a region of interest is discarded.
- [c4] The x-ray system of claim 1, further comprising an operator interface for
defining a region of interest comprising a portion of the x-ray detector, said
first and second sets of sensing circuits reading said detector elements outside
said region of interest while the x-ray detector is exposed to a radiation source.
- [c5] The x-ray system of claim 1, said first and second sets of sensing circuits
simultaneously reading said charge stored by said detector elements connecting
to at least two said scan lines.
- [c6] The x-ray system of claim 1, said first and second sensing circuits
simultaneously reading charge, said first sensing circuit reading said charge
from said detector elements connecting to a first group of at least two
consecutive said scan lines, said second sensing circuit reading said charge
from said detector elements connecting to a second group of at least two

consecutive said scan lines.

[c7] An x-ray system utilized to produce an image, the system comprising:
an x-ray source for generating x-rays;
a detector comprising detector elements arranged in rows and columns, said detector elements storing charge representative of an x-ray level;
first and second sets of sensing circuits reading said charge from first and second sets of said detector elements, respectively; and
first and second sets of scan lines comprising groups including at least one consecutive scan line connecting to each said detector element in one of said rows and columns, said first and second sets of scan lines connecting to said first and second sets of detector elements, respectively, said groups included in said first set of scan lines being adjacent to and alternating with groups included in said second set of scan lines.

[c8] The x-ray system of claim 7, further comprising first and second sets of data lines connecting to said first and second sets of said detector elements, respectively, said data lines being perpendicular to said scan lines.

[c9] The x-ray system of claim 7, said first and second sets of sensing circuits acquiring data outside a region of interest while said x-ray source generates said x-rays.

[c10] The x-ray system of claim 7, further comprising a system controller identifying said scan lines within a region of interest.

[c11] The x-ray system of claim 7, further comprising first and second sets of data lines connecting to said first and second sets of detector elements and crossing one dimension of said detector, said first set of data lines being adjacent to and alternating with said second set of data lines.

[c12] The x-ray system of claim 7, said first and second sensing circuits further comprising data reduction circuits, said data reduction circuits combining said charge from at least two said detector elements.

[c13] The x-ray system of claim 7, said first and second sensing circuits further

comprising data reduction circuits, said data reduction circuits combining said levels of charge stored by at least two adjacent said detector elements included in the same said group of scan lines.

[c14] The x-ray system of claim 7, further comprising:
an operator interface for defining a region of interest comprising a portion of the detector; and
a system controller identifying said scan lines within said region of interest.

[c15] A method for acquiring x-ray data within a region of interest, the method comprising:
defining a region of interest in an x-ray detector comprising detector elements connecting to data and scan lines, said data and scan lines being perpendicular to each other and each crossing one dimension of the x-ray detector, said scan lines forming first and second sets of scan lines read by first and second sensing circuits, respectively, said groups comprising at least one consecutive scan line, said groups included in said first set of scan lines being adjacent to and alternating with said groups included in said second set of scan lines;
exposing the x-ray detector to a radiation source;
after the x-ray detector is exposed, simultaneously reading levels of charge stored by said detector elements included in a first group included in said first set of scan lines and a second group included in said second set of scan lines with first and second sensing circuits, respectively, said first and second groups of scan lines being included in said region of interest; and
simultaneously reading said levels of charge stored by said detector elements included in a third group included in said first set of scan lines and a fourth group included in said second set of scan lines with first and second sensing circuits, respectively, said third and fourth groups being included in said region of interest.

[c16] The method of claim 15, further comprising:
during said exposing step, reading said levels of charge stored by said detector elements included in said groups of scan lines outside said region of interest with said first and second sensing circuits; and

discarding data based upon said levels of charge stored by said detector elements outside said region of interest.

[c17] The method of claim 15, further comprising combining said levels of charge stored by at least two said detector elements included in the same said group of scan lines.

[c18] The method of claim 15, further comprising combining said charge stored by at least two said detector elements.

[c19] The method of claim 15, further comprising reading levels of charge with said first and second sensing circuits simultaneously with exposure, said levels of charge stored by said detector elements outside said region of interest.

[c20] The method of claim 15, wherein said groups include at least two consecutive scan lines, each of said groups including an equal number of consecutive said scan lines.

[c21] The method of claim 15, said defining step further comprising defining said region of interest to be within one of a top and bottom half of said x-ray detector, one of said first and second groups including one of a first and last scan line included in said region of interest.

[c22] The method of claim 15, further comprising:
storing data representative of said levels of charge of said detector elements within said region of interest; and
discarding data representative of said levels of charge of said detector elements outside said region of interest.